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# 磁場変換関数データと Network-MT データによる九州地方の 3 次元比抵抗構造
# 3D Electrical Resistivity Imaging beneath Kyushu by Geomagnetic Transfer Functions and Network-MT Response Functions

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The Kyushu Island in the Southwest Japan Arc has many Quaternary active volcanoes, which exist along the volcanic front of N30$^o$E-S30$^o$W, in relation to the subduction of the Philippine Sea Plate (PSP). The volcanoes are located in northern and southern regions of the island, and no volcano is located in the central region between the two volcanic regions of the island. We have performed three-dimensional (3-D) inversion analyses to obtain a lithospheric-scale electrical resistivity structure (model) beneath the entire Kyushu Island by using a data set of Network-Magnetotelluric (MT) response functions [*Hata et al.*, 2015]. One of two major findings from a distribution of conductive anomalies in the model is that the volcanoes in the northern and southern volcanic regions have two different origins bordering the non-volcanic region at deep depths. Secondly, the degrees of magmatism and the relative contributions of slab-derived fluids to the magmatism vary spatially in the one non-volcanic and two volcanic regions.

A shallow depth resolution of the lithospheric-scale resistivity model, however, was too low to examine small-scale resistivity structures of the crust because of the period range between 480 and 40,960 s of the Network-MT data. Thus we have started to perform 3-D inversion analyses by using a data set of geomagnetic transfer functions whose period range is from 20 to 960 s to obtain a resistivity structure model, in which we can examine smaller-scale structures. The geomagnetic transfer functions were determined at 167 sites in the Kyushu district. Original raw data sets for the geomagnetic transfer functions were measured at the entire Kyushu island and several islands off the western coast of Kyushu from 1980·s to 1990·s [e.g., *Handa et al.*, 1992; *Shimoizumi et al.*, 1997; *Munekane et al.*, 1997]. In this presentation, we will show a new electrical resistivity model, which is obtained through a two-stage inversion process as follows. We determine a resistivity structure mainly at a shallow depth by applying 3-D inversion analyses for the geomagnetic transfer functions of 20-960 s first and then determine a lithospheric-scale resistivity structure by applying 3-D inversion analyses for the Network-MT response functions of 480-40,960 s, which is based on values of the previous resistivity model determined by using the geomagnetic transfer functions. In the two-stage inversion process, we use two types of DASOCC inversion code [*Siripunvaraporn et al.*, 2004; *Uyeshima et al.*, 2008; *Siripunvaraporn and Egbert*, 2009].